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Additions and Corrections in Salicaceae of Japan 2

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The circumscriptions of *Salix shiraii* Seemen and *S. rupifraga* Koidz. are clarified by the separation of *S. shiraii* var. *kenoensis* (Koidz.) Sugim., a plant of the Kanto Mountains and northeastern side of Mts. Yatsugatake. *Salix shiraii* var. *kenoensis* was usually included in *S. shiraii* but sometimes misidentified as *S. rupifraga*. *Salix sieboldiana* Blume has been generally recognized as a single polymorphic species, but var. *doiana* (Koidz.) H. Ohashi & Yonek. from southern Kyushu (Miyazaki and Kagoshima Prefectures) is recognized within the species. Three new nothosubspecies are recognized among the hybrids of *S. vulpina* Andersson: *Salix* ×*ampherista* C. K. Schneid. nothosubsp. *yamatoensis* (Koidz.) H. Ohashi & Yonek., *S.* ×*hiraoana* Kimura nothosubsp. *tsugaluensis* (Koidz.) H. Ohashi & Yonek. and *S.* ×*sendaica* Kimura nothosubsp. *ultima* (Koidz.) H. Ohashi & Yonek.

(Continued from J. Jpn. Bot. **81**: 35–40, 2006)

Key words: Hybrids, Japan, nothosubspecies, Salicaceae, *Salix*.

The Salicaceae of Japan is compiled by Ohashi (2001). This paper as well as a previous one (Ohashi and Yonekura 2006) intend to revise the systematic works of Japanese Salicaceae based on herbarium specimens kept mainly in TUS and TUS-K, and our field studies in various places in Japan. In this study herbarium specimens of KYO and TI are also examined.

4. *Salix shiraii* Seemen and *S. rupifraga* Koidz.

Salix shiraii Seemen is usually distinguished from *S. rupifraga* Koidz. by the features of leaf blades, bracts and longer ovary stipe (Figs. 1, 2). They are, however, often hardly distinguishable from each other mainly in the Kanto Mountains and Nagano Prefecture.

Salix shiraii was described from Nikko in Tochigi Prefecture and *S. rupifraga* Koidz. from Mt. Komagatake in the Akaishi Mountains in Yamanashi Prefecture. Both species grow in rocky places of high montane to subalpine regions in northern and central Honshu (Ohashi 2001). Most plants hitherto referred to *S. shiraii* from the Kanto Mountains are different from the typical form in having narrow leaves with persistent hairs on the lower surface and shorter bracts. They approach *S. rupifraga* in these characters, but, when comparing female plants in the same population, they are easily distinguishable from *S. rupifraga* by the long stipe of the ovary. *Salix shiraii* has the ovary stipe longer than the nectary against shorter or as long as, the nectary in *S. rupifraga*. Also, plants from northeastern side of Mts. Yatsugatake in Nagano Prefecture and from Mt. Akagi-san in Gunma Prefecture show the similar features to the Kanto Mountain variant of *S. shiraii*. The typical form of *S.*

Fig. 1. *Salix shiraii* Seeman (Nikko. Kimura 535, TUS-K 9793) showing leaf-shape and long ovary-stipe.

shiraii is confined to Mt. Asama-yama and Mt. Kabutoiwa-yama in Saku-shi and Mts. Myogi-san in the northern Kanto Mountains. We have not find typical *S. rupifraga* from the Kanto Mountains.

Koidzumi (1913) described *Salix kenoensis* Koidz. based on a female specimen collected on Mt. Buko-san in the Kanto Mountains of Saitama Prefecture, and a male specimen from Mt. Akagi-san. The former was selected by Kimura (1962) as lectotype of the species (Fig. 3). Sugimoto (1961) reduced this species to a variety of *S. shiraii* based on differences of leaf shape and degree of pubescence. Kitamura and Murata (1979) regarded *S. kenoensis* as a distinct species endemic to Mt. Buko-san. The female flowers and vegetative part of *S. kenoensis* are, however, indistinguishable from the Kanto Mountain variant mentioned above. Ohashi (2000, 2001) treated *S. kenoensis* as a synonym of *S. shiraii*. Here we follow Sugimoto's treatment (1961) and adopt the name *S. shiraii* var. *kenoensis* (Koidz.) Sugim. for the Kanto Mountains variant.

Salix rupifraga is restricted to the northern Akaishi Mountains and disjunctively to a few localities in the Hida Mountains. The typical *S. shiraii* (= *S. shiraii* var. *shiraii*) is distributed in the southern part of the Ôwu Mountain Range (northward to Yamadera in Yamagata Prefecture, southward to Mts. Nasu-dake in Tochigi Prefecture), the Nikko Mountains in Tochigi Prefecture and northernmost Kanto Mountains in Gunma and Nagano Prefectures. Most records of *S. rupifraga* and *S. shiraii* from Kanto Mountains, Mts. Akagi-san and Haruna-san and the northeastern side of Mts. Yatsugatake should be referred to *S. shiraii* var. *kenoensis* (Fig. 4).

The taxonomic position of *Salix shiraii* var. *kenoensis* is controversial. Kitamura and Murata (1979) classified *S. kenoensis* into the section Helix of subgen. Salix, because the male flowers of the species from Mt. Buko-san frequently have filaments connate at the base. In contrast, Ohashi (2000, 2001) grouped *Salix shiraii* including *S. kenoensis* and *S. rupifraga*, in section Hastatae of subgen. Vetrix, which is characterized by the male flowers with two free stamens. Connate stamens of *S. kenoensis* in Mt. Buko-san are, however, variable even within one catkin. Specimens from the mountain, e. g., Hasegawa a & c, 1 May 1980 (TUS), have nearly free stamens (Fig. 5). Moreover, *S. japonica*, a member of sect. Hastatae, has stamens connate at the very base (Kitamura and Murata 1979). *Salix shiraii* var. *kenoensis* should be classified in sect. Hastatae.

Fig. 2. *Salix rupifraga* Koidz. (Komaki-mura. Huno s. n., TUS-K 8823).

Fig. 3. *Salix kenoensis* Koidz. (Mt. Buko. S. Matsuda 104, TI, lectotype).

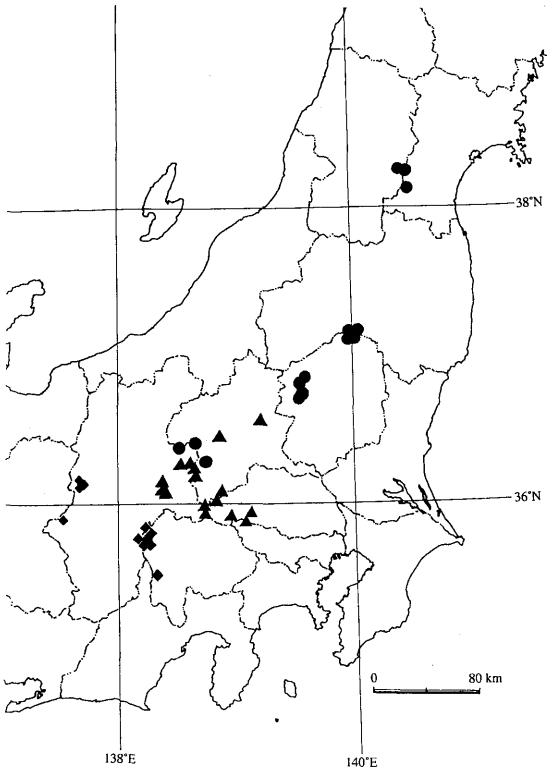

Fig. 4. Distribution of *Salix shiraii* var. *shiraii* (circle), *S. shiraii* var. *kenoensis* (triangle) and *S. rupifraga* (diamond) in Honshu, Japan.

A key to the species and variety discussed above is given below:

A. Leaf blade ovate-oblong; base cuneate to rounded, lower surface appressed-pubescent at least along costa, with raised veinlets when mature, pale green or slightly glaucous when young; bracts widely oblong, 0.6–0.8 mm long; ovary stipe usually less than 0.6 mm long, less than 0.8 mm long in fruit, nearly as long as bract ..... *S. rupifraga*

A. Leaf blade ovate to elliptic-ovate, base cordate to cuneate, shortly attenuate or rounded or all cordate, lower surface glabrescent or pubescent, usually with inconspicuous veinlets when mature, glaucous when young, but often slightly so in mature; bracts elliptic to broadly elliptic, 0.6–2.0 mm long; ovary stipe 0.5–0.8 mm long, usually 0.8–2.0(–2.3) mm long in fruit, longer than bract .... *S. shiraii*

B. Blade of mature leaves elliptic or elliptic-obovate, base rounded to cordate, lower surface glabrous .... var. *shiraii*

B. Blade of mature leaves elliptic, oblong or oblong-obovate, base mostly truncate or shortly attenuate but often cordate in a few lower leaves, lower surface with persistent silky hairs at least along costa ..... var. *kenoensis*

Salix shiraii Seemen in Bot. Jahrb. Syst. **30**: Beibl. **67**: 40 (1901); H. Ohashi in J. Jpn. Bot. **75**: 18 (2000) & in Sci. Rep. Tohoku Univ. ser. 4, Biol. **40**: 325 (2001). Type: JAPAN: Honshu, Tochigi Pref., Nikko, auf Felsen in 2000 m Hönne (M. Shirai 42, 43, May 1898, B–syntype, isosyntype in TI; U. Faurie 2142, 27 May 1898, B–syntype, isosyntype in KYO).

var. **shiraii**

Japanese name: Shirai-yanagi.

Distribution: Japan. NE and Central Honshu (Yamagata, Miyagi, Fukushima, Tochigi and Gunma Prefectures, also on Mts. Asama-yama and Mt. Kabutoiwa-yama in Nagano Prefecture). Rocky cliffs or ledges on upper montane to subalpine regions. Alt. 600–1000 m in Tohoku Dist. and alt. 1000–1700 m in Kanto Dist. and Nagano Prefecture.

Specimens examined: JAPAN. **HONSHU**. **Yamagata** Pref. monte Ryuzan (Yuki 4019, 12 June 1938, TUS-K). **Miyagi** Pref. Nojiri (Murai 101. 27 Jul. 1932, TUS-K); Syoto-toge (Ohashi s. n., 24 Jun. 1960, TUS); Shibata-gun, Kawasaki-machi, intter Aone et Gaga (Kimura 3079, 3 Jul. 1950, TUS-K); Gaga (Kimura 2388–2392, 9 Jun. 1935, TUS-K); ibid., ca. 1200 m (Sakai 840020–840024, 840026, 12 May 1984, TUS); Katta-gun, Zao-machi, Mt. Zao, near Fudo-no-taki, ca. 700 m (Sakai 8840012–840016, 12 May 1984,

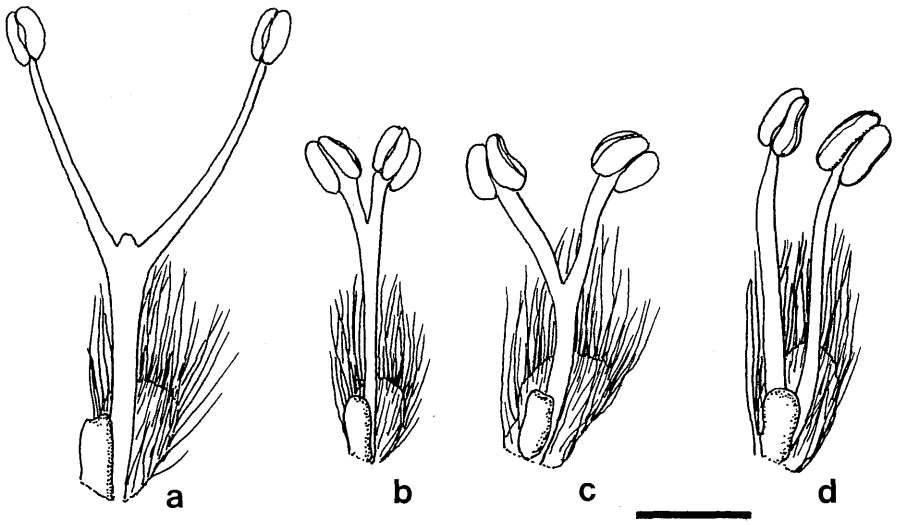

Fig. 5. Male flowers of *Salix shiraii* var. *kenoensis* from specimens collected on Mt. Buko-san. a: Hara s. n. (TUS-K). b, c: Hasegawa b (TUS). d: Hasegawa d (TUS). Scale bar: 1 mm.

TUS); Fudodaki in Mt. Zao (Sugaya s. n., 15 Aug. 1960, TUS); Mt. Zao, Fubo (Y. Momiyama s. n., 15 Jul. 1936, TUS-K). **Fukushima** Pref. Nishishirakawa-gun, Nishigo-mura, Shinkashi, 700–800 m (Fukuoka & Kurosaki 4651, 13 May 1989, TUS); Shinkashi-onsen, along Abukuma-gawa River (Yoshioka s. n., 26 Jun. 1967, TUS); Nishigo-mura, Kasshi Gorge (S. Suzuki 1582, 15 Jul. 1933, TUS; S. Suzuki 2667, 5 Jun. 1949, TUS); Mt. Asahi-dake (C. Suzuki s. n., 14 Aug. 1934, TUS); below Kasshi Spa (Hara s.n., 25 May 1957, TI); Kasshi-onsen (S. Suzuki 181, 23 Jun. 1931, KYO); Mt. Kasshi-zan (Imai s. n., Jun. 1915, KYO; Imai 3060, 3 Jun. 1924, TUS-K; Saito 22, 3 Aug. 1931, TUS-K). **Tochigi** Pref. Mt. Nasu (S. Suzuki 157, 21 Jun. 1931, KYO; Saito 32, 12 Jun. 1932, TUS-K); Nasu, prope fontem calidum Kitaonsen (Kimura 3546, 29 Aug. 1961, TUS-K; Kimura 3548, 3549, 16 May 1984, TUS-K); Mt. Takahara-yama (Numajiri 6, Apr. 1915, TUS-K); Shioya-gun, Kuriyama-mura, Hinata (Sugaya 79, 27 Mar. 1936, TUS-K); Kuriyama-mura, Setoai-kyo (Shimizu 84–943, 26 Jun. 1984, KYO, TUS); Kuriyama-mura, Nokado, Ogotozawa (Shimizu 84–933, 25 Jun. 1984, KYO); Nikko-shi, Misawa (Kubota s. n., herb. NSM no. 515, 24 May 1952, KYO, TUS, TUS-K); Umagaeshi (Furuse s. n., 14 May 1957, KYO, TUS); Iroha-zaka (Sakai & al. s. n., 19 May 1984, TUS); ibid., 1000–1100 m (Sakai & Endo 8401 56–58, 3 Jul. 1984, TUS; Sakai & Endo 840131, 3 Jul. 1984, KYO); ibid., near Sakae-bashi, ca. 900 m (Sakai 840082–840097, 18 May 1984, TUS; Sakai & Endo 840101–840114, 3 Jul. 1984, TUS); Umagaeshi, Daiichi-irohazaka (Hassegawa 14994, 14996, 14999 & 15006, 11 Jun. 1995, KYO; Hassegawa 15001, 15004 & 15005, 11 Jun. 1995, TUS; Hasegawa 14232 & 14233, 8 May 1993, KYO); Nikko, to upper stream of Daiya River from Umagaeshi (Furuse s. n., 14 May 1957, KYO); Nikko, on the bank of the Inari River, below Unryu Valley (Seto 28633, 13 Jun. 1982, KYO, TUS); Kegon (Kimura 535, 11 Jun. 1926, TUS-K); Misawabasi (Kimura 540–542, 13 Jun. 1926, TUS-K). **Gunma** Pref. Mt. Myōgisan (Mizushima 11645, 6 Sep. 1953, TI); Kanra-gun, Myogi-cho, Mts. Myogi-san, Mt. Hakuun-zan and Mt. Kondou-san, ca. 1000 m (Sakai 840050, 20 May 1984, TUS); Mt. Hakuun in Myogi (Hisauchi 3000, 29 Sep. 1940, TUS-K); the border between Gunma and Nagano Prefs. Mt. Hanamagari-yama (Satomi s. n., 22 Jul. 1957, TUS). **Nagano** Pref. Kitasaku-gun, Karuizawa-machi, between Tomeoyama and Hanamagariyama (Hara s. n., 10 Jun. 1972, TUS fr. immat.); Mt. Hanamagari-yama, ca. 1500 m (Ikeda s. n., 7 Jun. 1981, TUS); summit of Mt. Hanamagari-yama, ca. 1650 m (Hara & Kurosawa s. n., 15 Aug. 1975, TUS-K str.; Ikeda s. n., 26 Oct. 2001, TUS); Komoro-shi, Mt. Asama-yama, Hoenbo, ca. 1900 m (Ikeda s .n., 22 Sep. 1980, TUS); Saku-shi, Mt. Kabutoiwa-yama, Rosoku-iwa, ca. 1300 m (Ikeda s. n., 9 Jun. 1982, TUS; Ikeda s. n., 4 Jun. 1973, TUS, a right-hand branch only).

var. **kenoensis** (Koidz.) Sugim., New Keys Jap. Trees: 472 (1961).

Salix kenoensis Koidz. in Bot. Mag. Tokyo **27**: 265 (1913); C. K. Schneid. in Sarg., Pl. Wilson. **3**: 135 (1916); Kimura in Sci. Rep. Tohoku Univ. ser, 4, Biol. **28**: 37 (1962); Kitam. & Murata, Col. Illust. Woody Pl. Jap. **2**: 310 (1979). Type citation: 'Chitsibu (Musasi); Akagisan (Kodsuke)'. Type: JAPAN. Saitama Pref. (Prov. Musashi), Chichibu, [foot of] Mt. Buko [by stream behind the mountain] (S. Matsuda 104, [4] May 1901, TI fl. fem.) – Lectotype designated by Kimura (in Sci. Rep. Tohoku Univ. ser, 4, Biol. **28**: 37, 1962). Gunma Pref. (Prov. Kotsuke), Mt. Akagi-san (collector unknown 52, 6 May 1878, TI fl. masc. – (syntype).

Salix rupifraga auct. non Koidz.: Kimura in Satake & al., Wild Flow. Jap. Woody Pl. **1**: 46 (1989), pro parte, incl. distr. Gunma; H. Ohashi in Sci. Rep. Tohoku Univ. ser. 4, Biol. **40**(4): 326 (2001), pro parte, incl. Gunma e distrib. et specim. e Gunma, Saitama et Nagano, Ikeda s. n. (TUS).

Japanese name: Chichibu-yanagi.

Young branches sparsely pubescent, basal portion densely sericeous; stipules usually absent but rarely present on vegetative shoot, to 6 mm long, oblique, entire or with an obscure tooth. Basal leaves on young branch: petiole 0.5–6.0 mm long, sericeous; blade ovate, elliptic-obovate or oblong-ovate, 1–5 cm long, 0.4–3.5 cm wide, apex acute to subacuminate, base rounded or rounded-cordate, margin serrulate or crenate-serrate, upper surface glabrescent, lower surface densely to sparsely sericeous along nerves, lateral nerves 5–8(–10) pairs. Middle and apical leaves: petiole 4–13 mm long, sparsely sericeous or glabrescent; blade oblong, narrowly oblong or narrowly oblong-ovate, 4–11 cm long, 2.0–5.0(–5.5) cm wide, apex acuminate or acute, base rounded, rounded-cuneate or shallowly cordate, margin regularly serrulate or serrate, both surfaces brownish when young, densely pubescent, when mature upper surface green, glabrescent, lower surface glaucous, sparsely sericeous along costa, often densely so, sometimes also sericeous along nerves, lateral nerves 8–12 pairs, veinlets usually inconspicuous on lower surface. Flowers in late April to mid June. Male catkins 1.2–3.5 cm long, 4–10 mm thick, rachis densely sericeous, stipitate; stipe 2–7 mm long, with 1–3 leaves, leaves often deciduous, oblong or narrowly oblong-ovate, 2–20 mm long, 1–7 mm wide, subsessile, upper surface glabrous or sparsely pubescent, lower surface densely sericeous; bract broadly elliptic-ovate, basal one often ovate, 0.5–1.1 mm long, densely sericeous, ciliate, cilia to 1.5 mm long. Male flowers: nectary 1, adaxial, ca. 0.5 mm long; stamens 2.2–4.0 mm long, free or often connate, connate in various length from base. Female catkins 1.7–4.0 cm long and 3.5–7.0 mm thick, (2.0–)2.5–5.5 cm long and 6–12 mm thick in fruit; rachis, stipes, basal leaves and bracts as male catkins. Female flowers: ovary narrowly ovoid, 0.5–1.2 mm long, glabrous or rarely sparsely pilose, stipitate, stipe 0.5–0.8 mm long at anthesis, style 0.2–0.5 mm long; nectary 1, adaxial, ca. 0.5 mm long. Capsules (excluding style and stipe) ovoid, 2.8–3.6 mm long, stipitate, stipe 0.8–1.8(–2.3) mm long.

Distribution: Japan. Honshu: Gunma, Saitama, Tokyo and Nagano Prefectures. (the Kanto Mountains and NE. side of Mts. Yatsugatake). Rocky cliffs or ledges of upper montane to subalpine regions, often growing in limestone area, alt. 600–1800 m.

Specimens examined: JAPAN. **HONSHU. Gunma** Pref. Seta-gun, Fujimi-mura, Mt. Akagi (S. Suzuki s. n., 23 May 1960, TUS-K); Mt. Akagi-san, around the summit (Sakai 840467, 840469, 840472, 19 May 1984, TUS); W. of Mt. Kurobiyama in Mt. Akagi (Hara s. n., 18 Sep. 1957, TI); Mt. Haruna (Ikegami 500, 11 Aug. 1939, KYO); Mt. Haruna, Somadake (Mizushima 2353 & 2360, 15 Oct. 1953, TI); Mt. Haruna, near Haruna Zinzya (Hisauchi 2120, 11 Jul.

1937, TUS-K); Mt. Arafune-yama (Kato s. n., Oct. 1954, TI); Tano-gun, Nakazato-mura, Mt. Kanôsan, Maruiwa, 750 m (J. Murata & al. 7396, 30 Apr. 1979, TUS); Mt. Kanôsan, Nakaiwa, 850 m (J. Murata & al. 7256, 30 Apr. 1979, TUS); Mt. Kanôsan, 600–1000 m (J. Murata & al. 105250, 20 May 1983, TUS). **Nagano** Pref. Saku-shi, Iwamurata, ca. 700 m (Ikeda s. n., 3 Aug. 1987, TUS); Iwamurata, ca. 650 m (Ikeda 1, 3, 29 Apr. 1987, TUS); Saku-shi, Mt. Kabutoiwa-yama, 1000–1368 m (Ikeda s. n., 29 May 1996, TUS); Mt. Kabutoiwa-yama, Rosokuiwa, ca. 1300 m (Ikeda s. n., 4 Jun. 1973, TUS, excl. right-hand branch); Mt. Arafuneyama, 1100–1300 m (Ikeda s. n., 14 Aug. 1987 & 30 Aug. 2000, TUS); Mt. Arafuneyama (Ikeda 840522, 26 Jun. 1984, TUS; Sakai 840518, 26 Jun. 1984, KYO); Uchiyama, ca. 1300 m (Ikeda s. n., 18 May 1980, TUS); Kitasaku-gun, Mochizuki-machi, Kasuga, foot of Mt. Tadeshina-yama, ca. 1600 m (Ikeda s. n., 17 Jun. 1981, TUS); Kasuga Gorge (Ikeda s. n., 20 May & 15 Jul. 1990, 17 Jun. 1991, 16 Jun. 1996, TUS); ibid., 1300–1500 m (Ikeda 4045, 22 Oct. 2004, TUS); Minamisaku-gun, Yachiho-mura, Yachiho Heights (Ikeda s. n., 20 Jun. 1997, TUS); Minamisaku-gun, Minamiaiki-mura, Mt. Ogura-san (Ikeda 35006, 26 May 2003, TUS); the summit of Mt. Ogura-san, ca. 2100 m (Hara s. n., 12 Aug. 1958, TI); Minamisaku-gun, Kawakami-mura, Jyumonji Pass – Mikuni Pass (Ikeda s. n., 25 May 1986, TUS); near Shiroiwa (Ikeda s .n., 8 Jun. 1986, TUS); Azusayama. Shiraiwa, supra 1800 m (Ohi s. n., 22 Jun. 1930, TUS-K); Azusayama – Jyumonji Pass – Azusashiroiwa (Ikeda s .n., 30 Jul. 1986, TUS); Jumonji-tohge – Azusashiraiwa, ca. 1800 m (Hotta 12283, 26 May 1963, KYO); Jumonji-touge – Benkei-iwa (Hotta 10250, 8 Aug. 1958, KYO); near the summit of Azusashiraiwa, 1950 m (Furuse 43192, 21 Jun. 1965, KYO). **Saitama** Pref. Chichibu, Jumonji-toge (Inokuma 1038, 6 Jul. 1931, TUS-K); on the way to Jumonji-toge (Momiyama 3055, 6 Jul. 1937, TUS-K); Chichibu-gun, Ryogami-mura, Mt. Ryogami-yama, 600–1724 m (Iketsu & al. 1768, 1769, 25 May 1989, TUS); Mt. Ryogamiyama – Hatcho Pass, ca. 1600 m (Hara s. n., 19 May 1956, TI); Chichibu-gun, Mts. Mitsumine, limestone crevices (Shimizu 02657, 19 Oct. 1957, KYO); Mitsumine, Maeshiroiwa, ca. 1600 m (Hara s. n., 14 May 1955, TI); Mt. Buko (S. Matsuda 104, May 1901, TI, Lectotype of *Salix kenoensis* Koidz. selected by Kimura 1962); Mt. Buko (Furuse TSM. no. 1163, 22 Apr. 1955, KYO, TUS); Mt. Buko-san (Koidzumi s. n., 9 Jul. 1930, KYO; Hisauchi 90, 91, 29 Apr. 1934, KYO; Hisauchi 92, 93, 29 Apr. 1934, KYO, TUS-K; Hisauchi 531, 1 Jul. 1934, TI, TUS-K; Hasegawa a–d, 1 May 1980, TUS); NW. middle slope of Mt. Buko-san (Hara s. n., 29 Apr. 1934, TUS-K); Hara s. n., 24 May 1953, TI, TUS); Mt. Buko, 1000 m (Yamazaki 3770, 2 May 1955, TI); Mt. Buko, 1200 m, limestone crevices (Shimizu 2519, 2591, 18 Oct. 1957, KYO).

Salix rupifraga Koidz. in Bot. Mag. Tokyo **33**: 121 (1919); H. Ohashi in J. Jpn. Bot. **75**: 18 (2000), excl. Gunma e distrib. & in Sci. Rep. Tohoku Univ. ser. 4, Biol. **40**: 326 (2001), excl. Gunma e distrib. et specim. e Gunma, Saitama et Ikeda s. n. e Nagano (TUS). Type: JAPAN. Honshu. Yamanashi Pref. (Prov. Kai): Higashi-Komagatake (G. Koidzumi s. n., TI–holotype, KYO & TUS-K –isotype).

Japanese name: Koma-iwa-yanagi.

Distribution: Japan. Central Honshu (Nagano and Yamanashi Prefectures). Rocky cliffs or edges on subalpine regions, alt. 1000–1800 m.

Specimens examined. JAPAN: **Nagano** Pref. Kitaazumi-gun, Azumi-mura, inter Kamikoti et Sawando (Kimura 1761, 9 Jun. 1928, TUS-K); inter Nagawado et Sawando (Kimura 1719, 10 May 1928, TUS-K); Sawando, between Kamikochi and Shimashima, 1000 m (Horikawa 315, 330, 17 Oct. 1953, KYO); prope Nakanoyu (Kimura 2419, TUS-K); prope fontem callidum Shirahone (Terashima s. n., in 1950, TUS-K); middle stream of Azusagawa, on rock at pathside (Koidzumi s. n., May 1928, KYO); Azusagawa Valley (Koidzumi s. n., 2 Jun. 1928 & 19 Jun. 1940, KYO); Mt. Kiso-ontake (Takeda s. n., not dated, TUS-K); Mt. Kiso-ontake, near Takenoyu (Okamoto s. n., 13 Sep. 1930, KYO); Suwa-gun, Fujimi-machi, Kamanashidani, Dogasawa (Ikeda s. n., 9 Sep. 1990, TUS); Kamiina-gun, Miwamura, Todai, Makuiwa, 1400 m (G. Murata 8028, 6 Sep. 1954, KYO); Miwa-mura, Todai – Shiraiwa (Makuiwa) – Hatchozaka – Kitazawagoya (Mizushima s. n., 5 Aug. 1958, TUS); Kamiina-gun, Hase-mura, Todai, below Shiraiwa, ca. 1150 m (Hassegawa 14948 & 14949, 6 May 1995, KYO); Hase-mura, Todai, Shiraiwa, 1200 m (Shimizu 5516, 21 Sep. 1959, KYO); Mt. Shiraiwa, 1800 m (Shimizu 5640, 20 Sep. 1959, KYO); Mt. Senjo, by Todai-gawa River (Koidzumi s. n., 10 Aug. 1918, KYO); Kosetozawa (Koidzumi s. n., 16 Aug. 1918, KYO); Shimoina-gun, Osika-mura, Ogawara, Tsubakuroiwa (Katumata 29, 2 Aug. 1955, TUS-K). **Yamanashi** Pref. Kitakoma-gun, Komaki-mura, Omugawa Gorge (Huno s. n., 7 Jun. 1936, TUS-K – holotype of *Salix rupifraga* Koidz. var. *eriocarpa*

Kimura); Kitakoma-gun, Hakushu-cho, along Nakagawa, upper tributary of the Kamanashi River, 1500–1600 m (Shimizu 19983, 26 Jun. 1970, KYO); Hakushu-cho, Omu-gawa valley (Furuse 43069–43071, 16 May 1965, KYO); Kitakoma-gun, Sugawara-mura, ad ripas fl. Oziragawa (Huno 39, 40, 4 Jul. 1937, TUS-K); Nakakoma-gun, Mt. Higashi-koma-ga-take (Iishiba s. n., 11 Aug. 1926, TUS-K); Minamikoma-gun, Misato-mura, between Niikura and Yushima (Koidzumi s. n., 7 May 1939, KYO).

5. *Salix sieboldiana* Blume

Salix sieboldiana Blume was described on the basis of a plant originally collected by Siebold in Japan and cultivated at Bogor Botanic Garden in Java. The species was originally characterized in having glabrous oblong leaves with acuminate apex, rounded base, serrate margin, a glaucous lower surface and foliaceous stipules. Unfortunately these characters hardly distinguish the species from many Japanese *Salix*. Many taxa similar to *S. sieboldiana* had been added by Miquel (1867) and Seemen (1903) from Japan, although Koidzumi (1913) considered the species in a broad sense including those described by Miquel and Seemen and circumscribed the typical form as *S. sieboldiana* var. *typica* with "stamina 2 raro 1, filamentis liberis vel alte connatis". Later Koidzumi (1919, 1932, 1939) added some species similar to *S. sieboldiana.* These taxa have been revised in later works. Ohwi (1953, 1965a, 1965b) revised *S. sieboldiana* and its relatives into three species: *S. sieboldiana, S. harmsiana* Seemen and *S. buergeriana* Miq. Sugimoto (1961, 1972) recognized seven species: *S. aridaensis* Koidz., *S. doiana* Koidz., *S. tsukushiana* Koidz., and probably *S. propitia* Koidz. (as his erroneous name) in addition to those recognized by Ohwi. However, most recent authors recognized *S. sieboldiana* as one single polymorphic species characterized by male flowers with one or two stamens of which the filaments are connate to varying degrees in one catkin and ovaries are pubescent, with white, and ovaries are pubescent with crisped hairs (Kitamura and Murata 1979, Kimura 1989, Sakai 1995, Ohashi 2000, 2001).

After examining many living and dried specimens we noted that plants in Kagoshima and southern Miyazaki Prefectures in southern Kyushu are characterized by having narrower leaves of which the lower surface is not so strongly glaucous and male flowers predominantly with one stamen (Figs. 6, 7). The plants are referable to *Salix tsukushiana* Koidz. and *S. doiana* Koidz. Sakai (1995) recognized three types of female flowers in *Salix sieboldiana* of which those with the "Satsuma-yanagi" type are common in lowlands of Kagoshima Prefecture southward to Isl. Tanegashima. Plants intermediate between *S. sieboldiana* and *S. doiana* or *S. tsukushiana* are, however, found frequently in the northeastern part of Kagoshima and adjacent Miyazaki Prefectures. There remains a problem whether they constitute a hybrid swarm between the two species or they show a geographical cline in the regions. We recognize *S. doiana* as a variety of *S. sieboldiana.*

The other taxa recognized by Ohwi (1953, 1965a, 1965b) and Sugimoto (1962, 1972) mentioned above are difficult to discriminate clearly. However, there is a remarkable form of *Salix sieboldiana* in Shikoku that is a tree attaining up to 8 m tall. *Salix sieboldiana* is known to be shrubs or small trees at most up to 4 m tall. *Salix propitia* Koidz. and *S. sieboldiana* var. *shikokiana* Koidz. were found in Shikoku, but both were described as shrubs. Such characteristic habit of the Shikoku population of *S. sieboldiana* is not always recognizable on herbarium specimens or even in field in Shikoku, although some specimens collected in Shikoku are clearly recorded as they were tall trees (4–5 m tall). Flowers of such tree *S. sieboldiana* from Shikoku are, however, indistinguishable from those of *S. sieboldiana* in northern

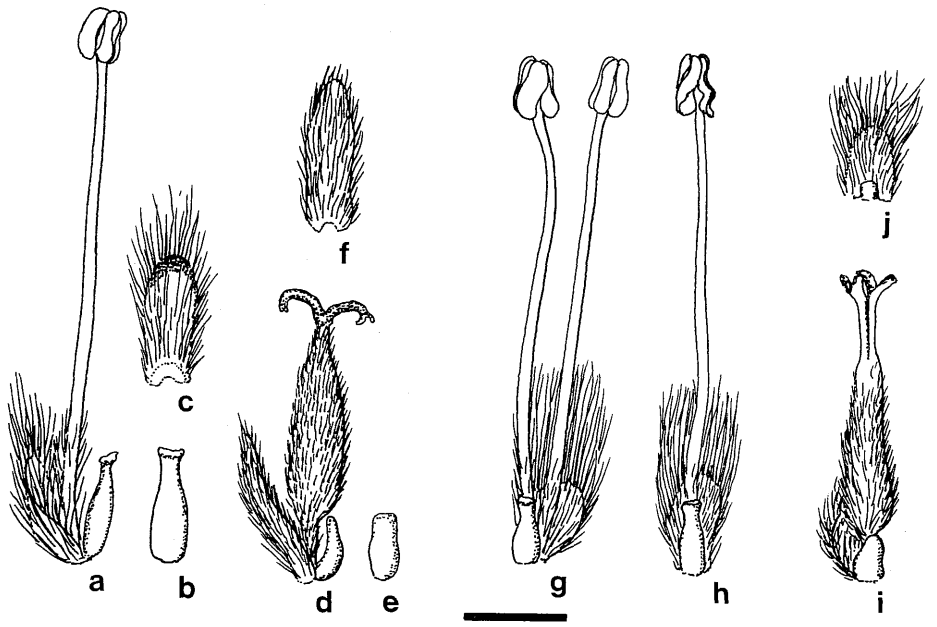

Fig. 6. Flower morphology of *Salix sieboldiana* var. *doiana* (a–f) and var. *sieboldiana* (g–j). a–c: Male flower (Kimura 392, TUS-K 10005). d–f: Female flower (Kimura 263, TUS-K 10048). a, d: lateral view of a flower. b, e: adaxial view of a ventral nectary. c, f: abaxial view of a bract. g, h: adaxial view of male flowers from a catkin (Kimura 471, TUS-K 10435). i, j: Female flower (Kimura 276, TUS-K 10157). i: adaxial view of a flower. J: adaxial view of a bract showing dorsal nectary. Scale bar: 1 mm. Drawn from original sketches by H. Sakai on each specimen cited above.

Kyushu. Further studies seem to be needed to clarify the form of tree *S. sieboldiana* and also morphological variation and distinctness within *S. sieboldiana* complex.

Key to the varieties of *Salix sieboldiana*:

A. Stamens predominantly 1 per flower; bracts 1.5–2.0 mm long; mature leaf blade cuneate or shortly attenuate at base, undersurface pale or slightly glaucous ..... var. *doiana*

A. Stamens predominantly 2 per flower, filaments connate into 1 in various degrees; bracts 1.0–1.5 mm long; mature leaf blade usually truncate or truncate-cordate at base, undersurface prominently glaucous ..... var. *sieboldiana*

Salix sieboldiana Blume, Bijdr. Fl. Ned. Ind. **10**: 517 (1825); Koidz. in Bot. Mag. Tokyo **27**: 93 (1913), ut *typica*; H. Ohashi in J. Jpn. Bot. **75**: 19 (2000) & in Sci. Rep. Tohoku Univ. sect. 4, Biol. **40**: 327 (2001). Type: "Crescit: sub nomine *S. albae* a Doct. v. Siebold ex Japonia missa et nunc in horto botanico Buitenzorgii culta" (syntypes in L, non vidi; photographs of syntypes in KYO).

var. **sieboldiana**.

Salix buergeriana Miq. in Ann. Mus. Bot. Lugduno-Batavi **3**: 28 (1867).

Salix saidaeana Seemen, Salic. Jap.: 68, t. 17 (1903), p. p.

Salix daiseniensis Seemen, Salic. Jap.: 65, t. 15 (1903).

Salix harmsiana Seemen, Salic. Jap.: 73, t. 18 (1903).

Fig. 7. *Salix sieboldiana* Blume var. *doiana* (Koidz.) H. Ohashi & Yonek. (Ijyûin. Doi s. n., TUS-K 2476).

Salix sieboldiana Blume var. *sikokiana* Koidz. in Bot. Mag. Tokyo **27**: 93 (1913).

Salix propitia Koidz. in Bot. Mag. Tokyo **27**: 266 (1913).

Salix aridaensis Koidz. in Acta Phytotax. Geobot. **8**: 111 (1939).

Salix daiseniensis Seemen var. *rotundifolia* Kimura in Bot. Mag. Tokyo **59**: 80 (1946).

For other homotypic synonyms and further bibliography see Ohashi (2000, 2001).

Japanese name: Yama-yanagi.

Distribution: Endemic to Japan. W. Honshu (Kinki Dist. and westward), Shikoku and Kyushu except most of Kagoshima Prefecture. Hillsides and montane grasslands, forest margins from lowlands to montane regions.

Representative specimens examined. JAPAN. **HONSHU**. **Wakayama** Pref. Arita-gun, Yawatamura (Okamoto 19213, 28 Apr. & 22 Sep. 1938, TUS-K fl. masc. & str. – isosyntypes of *Salix aridaensis* Koidz.). **Kyoto** Pref. Takeno-gun, Amino-cho, Kobama – Kakedzu, 15 m (Tsugaru & al. 27099, 2 Oct. 1998, TUS). **Hyogo** Pref. Kawanishi City, Mt. Myôken-san, 500 m (Kurosaki 12487 & 12488, 1 May 1982, TUS); Shisou-gun, Chigusa-cho, S. foot of Mt. Mimuro-yama, 700–1000 m (Kurosaki & Imai 2175, 2176, 27 Apr. 1997, TUS); Kanzaki-gun, Ichikawa-cho, Kasagata-jinja – summit of Mt. Kasagata-yama, 600–940 m (Kurosaki 13229, 15 May 1983, TUS); Sayou-gun, Sayou-cho, Mt. Hinakura-san, Onemidawa – the summit, 800–1000 m (Kurosaki 16354, 16355, 8 May 1988, TUS); Yabu-gun, Ooya-cho, Sugigasawa, 700 m (Kurosaki & Imai 1516, 3 May 1993, TUS); ibid., 700–750 m (Hashimoto & al. 1351, 2 May 1998, TUS); Kobe-shi, Nada-ku, around Gokuraku-chaya, 700–800 m (Miyake 4562, 18 May 1996, TUS); Mt. Rokko-san (Ui s. n., 23 Jun. 1929, TUS). **Okayama** Pref. Atetsu-gun, Oosa-cho, Furuya National Forest, 709 stand, 780 m (Noshiro & al. TWTw-18438, 2 Jun. 2000, TUS). **Shimane** Pref., Ooda-shi, Mt. Sanbe-san (Midorikawa 2275, 16 May 1981, TUS); Oda-shi, Shigaku, ca. 400 m (Oka 49926, 3 Aug. 1986, TUS); Kanoashi-gun, Mt. Suzuno-ootani-yama (along the Iriegawa stream), 650–750 m (J. Murata 10985, 2 May 1981, TUS). **Tottori** Pref. Seihaku-gun, Daisen-cho, summit of Mt. Daisen (Furuse s. n., 17 Jul. 1966, TUS); SW. slope of Mt. Daisen, along the Prefectural Route #45, along Ichinosawa, 910–920 m (M. Suzuki & al. 45026, 9 May 2004, TUS); Hino-gun, Kofu-cho, Kagamiganaru, the entrance of mountain path to Mt. Karasugasen, 920–930 m (M. Suzuki & al. 45003, 9 May 2004, TUS); Kagamiganaru Moor, ca. 920 m (M. Suzuki & al. 45047, 9 May 2004, TUS). **Yamaguchi** Pref. Abu-gun, Atoo-machi, Mt. Nomichi-yama – Nomichi-tooge, 500–700 m (J. Murata 10867, 1 May 1981, TUS); Toyoura-gun, Toyota-cho, Takanoko (Imada 7490, 7 Aug. 1984, TUS); Toyoura-cho, Onigajo (Imada 4542, 20 Jul. 1980, TUS); Asa-gun, Onoda-cho, Mt. Ryuo-zan (Nagatomi s. n., 16 Nov. 1935, TUS); Yamaguchi-shi, Araya (Miyake s. n., 4 Jun. 1980, TUS). **SHIKOKU**. **Ehime** Pref. Uma-gun, Besshiyama-mura, Mt. Higashi-Akaishi, in serpentine area, 1600–1700 m (M. Takahashi 2031, 2032, 2044, 21 Jun. 1985, TUS); Mt. Ishizuchi (M. Yamanaka s. n., 7 Aug. 1966, TUS); Kamiukena-gun, Saragamine (S. Yamamoto 12113, 21 Sep. 1966, TUS); Uma-gun, Shingu-mura, Mt. Sanboshi-yama (S. Yamamoto 12178, 29 Jul. 1966, TUS); Yuzuhara-machi – Hiyoshi-mura; around Mt. Kokenzan, 300–500 m (J. Murata 15022, 11 Apr. 1983, TUS); Onsen-gun, Kawauchi-cho, Shirai Pass (Yamamoto 12489, 5 May 1966, TUS); Ochi-gun, Tamagawa-cho, Nibukawa (Yamamoto 12279, 19 May 1963, TUS; Yamamoto 12409, 5 Jun. 1960, TUS); Kamiukena-gun, Kuma-cho, Saraga-mine, 1030 m (Takahashi 2013, 2015, 4 Jun. 1985, TUS). **Kochi** Pref. Kanbara-machi, Nakakawauchi (J. Murata 15001, 11 Apr. 1983, TUS); Takaoka-gun, Kubokawa-machi, above Morigauchi, 370 m (Tateishi & al. 16076, 30 Mar. 1992, TUS); Takaoka-gun, Yusuhara-machi, above Kubotani, 670 m (Tateishi & al. 15840, 30 Mar. 1992, TUS); Takaoka-gun, Hidaka-mura, Oritsuki (T. Yamanaka 52193, 14 Apr. 1968, TUS); Susaki-shi, Hyora (T. Yamanaka 36661, 10 Apr. 1963, TUS); Kami-gun, Kahoku-machi, Gozaishoyama (T. Yamanaka 42359, 29 Apr. 1965, TUS); Muroto-si, Kawachi (T. Yamanaka 42212, 16 Apr. 1965, TUS); Aki-gun, Umaji-mura, Naka River, confluence of Ase-dani, 560 m (Noshiro & al. TWTw-20224, 27 Apr. 2003, TUS); valley of Naka-gawa River, SE foot of Mt. Jinkichi-mori, 870–880 m (Yonekura 10086, 27 Apr. 2003, TUS); SE slope of Mt. Jinkichi-mori, 870 m (Noshiro & al. TWTw-20227, 27 Apr. 2003, TUS); Umaji-mura, valley of Yasuda-gawa River, near the gate of Tochidani Forest Road, ca. 450 m (Yonekura 10038, 26 Apr. 2003, TUS). **Kagawa** Pref. Takamatsu-shi – Sakaide-shi; Goshiki-dai (Shimamura & al. s. n., 11 Apr. 1973, TUS); Kagawa-gun, Shionoe-machi, Mt. Ohtaki-san (Hoshi 508, 29 Jul. 1982, TUS). **Tokushima** Pref. Miyoshi-gun, Higashiiyayama-mura, Mt. Tsurugi-san (T. Yamanaka 52742 & 52753, 20 Jun. 1968, TUS); Mt. Tsurugisan, Minokoshi – the summit, 1500–1900 m (J. Murata 11233, 11234, 24

Jun. 1981, TUS); Mt. Tsurugi-san, Minokoshi – Nishijimajinja (Hoshi 421, Jul. 1982, TUS); Miyoshi-gun, Yamashiro-machi, North side of Mt. Noganoikeyama, 700–1000 m (J. Murata 11261, 24 Jun. 1981, TUS); Kyobashira-toge (M. Yamanaka s. n., 5 May 1961, TUS); Oe-gun, Misato-son, Mt. Okunono, ca. 1000 m (Ibaragi 51202009, 12 May 2002, TUS); Naka-gun, Kizawa-son, 1200 m (Deguchi & Tanabe 7825, 27 Jul. 1992, TUS). **KYUSHU**. **Nagasaki** Pref. Kitamatsuura-gun, Sechibaru-cho, Uenobaru-men, Hiragawara, ca. 510 m (Yonekura 92083, 27 Mar. 1992, TUS); Sasebo-shi, Tsutsui-cho, ca. 260 m (Yonekura 96266, 8 May 1996, TUS); Eboshi-cho, Mt. Eboshi-dake, ca. 560 m (Yonekura 96189, 5 May 1996, TUS); Nishisonogi-gun, Kinkai-cho, Katagamigo, Mt. Katagamidake, 250–260 m (Yonekura 94109, 25 Mar. 1994, TUS); Nagasaki-shi, summit of Mt. Iwaya-yama (Yonekura 95890, 17 Aug. 1995, TUS); Koebara-machi, summit of Mt. Iwaya-san (Yonekura 95204, 95205, 5 Apr. 1995, TUS). **Saga** Pref. Fujitsu-gun, Tara-cho, Tara, Nakayamagoe – Nakayama Campground, 700–710 m (Yonekura & Hirano 98734, 21 May 1998, TUS). **Fukuoka** Pref. Fukuoka-shi, Mt. Sefuri-yama, ca. 950 m (Oka 47233, 8 Aug. 1982, TUS); Fukuoka-shi, Hakozaki (Ichikawa 201034, 14 May 1928, TUS); Saikawa-machi, Mt. Kuramochi-yama (Oka 46244, 4 May 1981, TUS). **Kumamoto** Pref. Tamana-shi, Yamada (Hamada T-1219, 5 Apr. 1967, TUS); Kikuchi-shi, Horai (Yamashiro 4380, 12 May 1963, TUS); Aso-gun, Oguni-machi, Mt. Waita-san (Yamashiro 1217–1219, 6 May 1962, TUS); Aso-machi, Matoishi, Matoishi-gen'ya, 860–880 m (Yonekura 95913, 18 Aug. 1995, TUS); Aso-machi, Futae Pass (Yamashiro 4398, 27 Apr. 1958, TUS; Yamashiro 4371, 29 Apr. 1960, TUS); Takamori-machi, Yamanokuchi (Oka 45327, 17 Jul. 1980, TUS). **Oita** Preef., Mt. Haneyama, 1100 m (Meyer & al. 17366, 21 Nov. 1978, TUS). **Miyazaki** Pref., Nishiusuki-gun, Hinokage-cho, confluence of Mitate Valley and Kasamatsu Valley, 980 m (Noshiro & al. TWTw-21110, 29 May 2004, TUS); Higashiusuki-gun, Shiiba-son, Miyazaki Experimental Forest of Kyushu Univ., 990 m (Noshiro & al. TWTw-17043, 2 Oct. 1997, TUS); Kitagawa-son, Hourigawa – Mt. Ôkue-yama, 400–800 m (J. Murata 9759, 29 May 1980, TUS). **Kagoshima** Pref., Mt. Kirishima, near Hayashida-onsen (Sugaya & Sohma s. n., 22 May 1960, TUS).

var. **doiana** (Koidz.) H. Ohashi & Yonek., comb. nov.

Salix doiana Koidz. [in Doi, Flor. Satsum. **2**: 103 (1931)] in Acta Phytotax. Geobot. **1**: 21 (1932). Type: JAPAN: Kyushu. Kagoshima Pref. (Prov. Satsuma), Ijûin (Y. Doi 9, 12 Oct. 1928, KYO –lectotype designated by Kimura 1981; TUS-K –isolectotype).

Salix tsukushiana Koidz. in Bot. Mag. Tokyo **33**: 220 (1919). Type: Japan. Kyushu. G. Koidzumi s. n. (fl. fem.). Mar. 1918. (TI–holotype).

Leaves at middle or apical portion of current branch: blade oblong or narrowly oblong, margin crenate-serrate, upper surface green, brownish- or white-pubescent when young, glabrescent when mature, lower surface pale or weakly glaucous, brownish or whitish pubescent when young, hairs persistent at least along costa, lateral nerves 8–13 pairs. Male flowers: bract elliptic, 1.0–1.5 mm long, pale brown throughout or dark brownish apically; stamen usually 1, rarely flowers with 2 stamens mixed in basal part of catkin. Female flowers: bracts oblong or oblong-ovate, 1.5–2.0(–2.5) mm long, dark brown at apex; fruit stipe 0.5–1.2 mm long.

Japanese name: Satsuma-yanagi.

Distribution: Endemic to Japan. S. Kyushu (Miyazaki and Kagoshima Prefectures). Hillside slopes at low elevations.

Specimens examined: **KYUSHU**. **Kagoshima** Pref. Aira-gun, Hayato-cho, Hyokiyama (Kimura 398, 413, 414 & 1066, 20 Mar. 1926, TUS-K); inter Kareigawa et Hyokiyama (Kimura 408, 409, 20 Mar. 1926, TUS-K); Kagoshima-shi, prope Kagoshima (Kimura 1025–1030, 1032–1037, 15 Mar. 1926, TUS-K); Ijyûin (Y. Doi s. n. Folia 12 Oct. 1928 & Flores 24 Mar. 1929 TUS-K); in colle Muregaoka (Murakami s. n., Mar. 1926, TUS-K); Sakurazima (Masamune s. n., 24 Apr. 1925, TUS-K; Kimura 426, 1086, 31 Mar. 1926, TUS-K); Ibusuki-gun, Ei-cho, near Mt. Yahazu-dake, Nigarachi-pass, 240 m (Maruyama s. n., 2 Apr. 1981, TUS); Kimotsuki-gun, Uchinoura-cho, E. slope of Kano-dake Hill, ca. 160 m (Yonekura 10962, 26 Mar. 2004, TUS); Uchinoura Town, S. face of Mt. Kunimi, 650–680 m (Noshiro & al. TWTw-21014, 29 Mar. 2004, TUS); ibid., ca. 660 m (Noshiro & al. TWTw-21005, 29 Mar. 2004, TUS); Sata-machi (Nishida s. n., 13 Dec. 1951, TUS); Sata-mati, inter Izasiki et Simadomari (Sugaya & Sohma s. n., 23 May 1960, TUS); Isl. Tanegashima, Nishinoomote City, between

Urada and Kunigami, 60–90 m (Maruyama & Nemoto 22296, 221 Mar. 1982, TUS). Cultivated in Tokyo. In horto Koisikawensi culta. A. Kimura 39 (TUS-K) & A. Kimura s. n. 7 May 1924 (TUS-K) [probably from the authentic living plant determined by Koidzumi as *Salix tsukushiana* Koidz.].

6. **Hybrids of *Salix vulpina* Andersson**

Six hybrids are known between *Salix vulpina* and other species (Ohashi 2001). A subspecies of *S. vulpina*, subsp. *alopochroa,* is recognized as distinct (Ohashi and Yonekura 2006). Three of the hybrids are presumed to be derived from *S. vulpina* subsp. *alopochroa* as one parent. They need to be separated to distinct nothosubspecies.

i. A hybrid between *Salix caprea* L. and *S. vulpina* Andersson

Salix ×*sendaica* Kimura is the name for a hybrid between *S. caprea* L. and *S. vulpina* Andersson subsp. *vulpina*. *Salix* ×*ultima* Koidz. is considered to be a hybrid between *Salix caprea* and *S. vulpina* subsp. *alopochroa*. A new combination becomes necessary for *S.* ×*ultima* Koidz. under *S.* ×*sendaica*:

Salix ×sendaica Kimura in Sci. Rep. Tohoku Imp. Univ. ser. 4, Biol. **6**: 196 (1931); H. Ohashi in Sci. Rep. Tohoku Univ. ser. 4, Biol. **40**: 377 (2001).

Japanese name: Sendai-yanagi.

nothosubsp. **ultima** (Koidz.) H. Ohashi & Yonek., comb. et stat. nov.

Salix ×*ultima* Koidz. in Acta Phytotax. Geobot. **8**: 111 (1939) = *Salix caprea* × *S. vulpina* subsp. *alopochroa*.

Japanese name: Kongô-bakko-yanagi.

ii. Hybrids between *Salix integra* Thunb. and *S. vulpina* Andersson

Salix ×*hiraoana* Kimura is presumed to be a hybrid between *S. integra* Thunb. and *S. vulpina* subsp. *alopochroa*. A hybrid between *S. integra* Thunb. and *S. vulpina* subsp. *vulpina* needs a new nothosubspecific name.

Salix ×hiraoana Kimura in Bot. Mag. Tokyo **40**: 9 (1926), pro sp.; H. Ohashi in J. Jpn. Bot. **75**: 33 (2000) & in Sci. Rep. Tohoku Univ. ser. 4, Biol. **40**: 370 (2001).

Japanese name: Hirao-yanagi.

nothosubsp. **tsugaluensis** (Koidz.) H. Ohashi & Yonek., comb. et stat. nov.

Salix ×*tsugaluensis* Koidz., Fl. Symb. Or.-Asia.: 33 (1930), pro sp. [Type: Japan. Honshu. Aomori Pref.: Hirosaki. Faurie 2154. May 1898 (P–holo.)] = *Salix integra* Thunb. × *S. vulpina* Andersson subsp. *vulpina*.

Salix ×*tsugaluensis* var. *latifolia* Kimura in Sci. Rep. Tohoku Univ. ser. 4, Biol. **19**: 189, fig. 2 (1952) [Type: Japan. Honshu. Miyagi Pref. (Prov. Rikuzen): Sendai. A. Kimura 3078 (fol.). 14 Oct. 1949. (TUS-K–holo.)].

Japanese name: Tsugaru-yanagi.

iii. Hybrids between *Salix udensis* Trautv. & Mey. and *S. vulpina* Andersson

Salix ×*ampherista* C. K. Schneid. is presumed to be a hybrid between *S. udensis* Trautv. & Mey. and *S. vulpina* Andersson subsp. *vulpina,* while *Salix* ×*yamatoensis* Koidz. and *S.* ×*ishikawae* Kimura are regarded as hybrids between *S. udensis* and *S. vulpina* Andersson subsp. *alopochroa* (Kimura) H. Ohashi & Yonek. A new nothosubspecific name is needed for the latter two hybrids.

Salix ×ampherista C. K. Schneid. in Sarg., Pl. Wilson. **3**: 175 (1916), pro sp.; H. Ohashi in J. Jpn. Bot. **75**: 31 (2000) & in Sci. Rep. Tohoku Univ. ser. 4, Biol. **40**: 365 (2001).

Japanese name: Hakodate-yanagi.

nothosubsp. **yamatoensis** (Koidz.) H. Ohashi & Yonek., comb. et stat. nov.

Salix ×*yamatoensis* Koidz. in Bot. Mag. Tokyo **39**: 2 (1925) [Type: Japan. Honshu. Nara Pref. (Prov. Yamato): Mt. Butsuryujigoye (sphalm. Butsuyujigoye), Kongosan. G. Koidzumi s. n. (fol.). [cult. in Horto Bot. Kyoto Univ., Jul. 20, 1928].

(KYO–lectotype designated by Kimura 1981)], pro sp. = *S. udensis* Trautv. & Mey. × *S. vulpina* Andersson subsp. *alopochroa* (Kimura) H. Ohashi & Yonek.

Salix ×*ishikawae* Kimura in Sci. Rep. Tohoku Imp. Univ. ser. 4, Biol. **12**: 100 (1937) [Type: Japan. Honshu. Hyogo. Prov. Settu: monte Rokkosan. E. Isikawa 2 (fl.). 23 Apr. 1935 (TUS-K–holo.)] = *S. udensis* Trautv. & Mey. × *S. vulpina* Andersson subsp. *alopochroa* (Kimura) H. Ohashi & Yonek.

Japanese name: Yamato-yanagi.

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4．シライヤナギとコマイワヤナギ：シライヤナギとコマイワヤナギは葉の形と毛の状態，苞の大きさ，子房柄の長さで区別できるが，両種の中間的な形があり，チチブヤナギと呼ばれる．Ohashi（2000，2001）はチチブヤナギをシライヤナギに含めたが，これをシライヤナギの変種とした杉本（1961）説を受けいれたい．チチブヤナギについては長谷川義人氏が Makino 牧野植物同好会誌第 3 号（1983）「植物雑記（2）毛野国のヤナギ」に記述しておられ，大変参考になった．チチブヤナギは関東山地と八ヶ岳の北東側に分布する．Ohashi（2000，2001）はコマイワヤナギが群馬，長野，山梨に分布するとしたが，群馬からの記録はチチブヤナギに訂正する．また，Ohashi（2001）で埼玉県 Mt. Ryogami-san. Iketsu & al. 1768（TUS）のものはコマイワヤナギとして引用されているが，これもチチブヤナギに訂正する．

5．ヤマヤナギ：ヤマヤナギは北村・村田（1979）の扱い以来本州和歌山県以西，四国，九州に広く分布する多形の 1 種と見られている．しかし，鹿児島県と宮崎県南部のヤマヤナギは 1 個の雄蕊をもつ雄花が多く，やや大きな苞をもち，成葉の葉身は基部が鈍形から鋭形で下面は淡緑色からわずかに白色で基部には軟毛がある．この形は Koidzumi が *Salix tsukushiana* Koidz.ホソバヤマヤナギ（1919）および *S. doniana* Koidz.サツマヤナギ（1931）と命名したものに相当する．地域的なまとまりのある変種として区別できると考える．

6．前報でサイコクキツネヤナギをキツネヤナギの亜種として区別した（Ohashi and Yonekura 2006）．これに伴い Ohashi（2000，2001）がキツネヤナギを片親とする雑種として整理した 6 雑種

種のうち3雑種種でサイコクキツネヤナギを片親とする新雑種亜種を区別することが必要となった．(i) ハコダテヤナギ（オノエヤナギ×キツネヤナギ）の1雑種亜種としてヤマトヤナギ（オノエヤナギ×サイコクキツネヤナギ）*Salix*×*ampherista* C. K. Schneid. nothosubsp. *yamatoensis* (Koidz.) H. Ohashi & Yonek.，(ii) センダイヤナギ（バッコヤナギ×キツネヤナギ）の雑種亜種にコンゴウバッコヤナギ（バッコヤナギ×サイコクキツネヤナギ）*Salix*×*sendaica* Kimura nothosubsp. *ultima* (Koidz.) H. Ohashi & Yonek.，および (iii) ヒラオヤナギ（イヌコリヤナギ×サイコクキツネヤナギ）の雑種亜種にツガルヤナギ（イヌコリヤナギ×キツネヤナギ）*Salix*×*hiraoana* Kimura nothosubsp. *tsugaluensis* (Koidz.) H. Ohashi & Yonek.を認めた．

終わりに，チチブヤナギとコマイワヤナギについて深い関心をもって多数の標本を提供して下さった池田登志男氏（長野県佐久市）にお礼申し上げます．

（東北大学植物園）